

## TERRASAR-X INTERFEROMETRY FOR LANDSLIDE MONITORING

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### Abstract

To monitor and detect the events of landslide, rock-fall along the banks of the Yangtze River in the Three Gorges area, an integrated TerraSAR-X D-INSAR technique with corner reflectors (CR-INSAR) is developed, it might be more effective than the conventional geological, and discrete GPS measurement techniques, conventional D-INSAR, as well as nature persistent scatteres method. Unfortunately, in most parts of the world, the correlation between radar acquisitions degrades with time due to vegetation, climatic condition, or other surface property changes. In those areas only a few persistent point scatterers or even no any one can be found out. TerraSAR-X provides not only high resolution data, but also a possibility of a short observation cycle. The corner reflectors, duo to their design, provide a very clear and stable target response (both amplitude and phase) to the radar at any acquisition time. They don't suffer from de-correlation effects of conventional InSAR. Aside from the millimeter-lever measurement accuracy, the great benefit of this technique is the regular and remote monitoring and measuring without the need for repeated ground field visits and their associated costs. In this newly developed D-INSAR system the conventional INSAR method, nature persistent scatteres and corner reflectors are integrated, together with the high resolution and short repeat cycle property of the TerraSAR-X are tested in some study areas. The results indicate that a continuous and global monitoring of landslide in Three Gorges area can be realized.